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[54] INTEGRATED INTERACTIVE RESTAURANT COMMUNICATION SYSTEM FOR FOOD AND ENTERTAINMENT PROCESSING

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[51] Int. Cl.⁴ G06F 1/00

[52] U.S. Cl. 364/900

[58] Field of Search 364/900 MS File, 401

[56] References Cited

U.S. PATENT DOCUMENTS

3,588,838	6/1971	Felcheck	340/172.5
3,668,307	6/1972	Face et al.	178/5.6
3,691,295	9/1972	Fisk	178/58
3,746,780	7/1973	Stetten et al.	178/6.6 A
3,752,908	8/1973	Boenke et al.	178/5.6
3,757,225	9/1973	Ulicki	325/308
3,814,841	6/1974	Ulicki	178/5.1
3,836,888	9/1974	Boenke et al.	340/172.5
3,903,402	9/1975	Petit et al.	235/151.21
3,968,327	7/1976	Gregg, III	178/6.8
4,001,785	1/1977	Miyazaki et al.	340/172.5
4,001,807	1/1977	Dallimonti	340/324 A
4,008,369	2/1977	Theurer et al.	358/84
4,028,733	6/1977	Ulicki	360/10
4,054,911	10/1977	Fletcher et al.	358/141
4,064,490	12/1977	Nagel	364/200
4,075,686	2/1978	Calle et al.	364/200
4,084,229	4/1978	Taylor et al.	364/200
4,117,605	10/1978	Kurland et al.	35/9 A
4,122,519	10/1978	Bielawski et al.	364/200
4,128,757	12/1978	Garner, Jr.	235/383
4,143,360	3/1979	Bernhart et al.	340/711
4,164,024	8/1979	Gilbert	364/900
4,191,956	3/1980	Groothuis	340/789

4,222,111	9/1980	Sloan et al.	364/900
4,247,106	1/1981	Jeffers et al.	273/85 G
4,251,691	2/1981	Kakihara et al.	179/2 TV
4,264,925	4/1981	Freeman et al.	358/86
4,283,709	8/1981	Lucero et al.	340/147 R
4,296,476	10/1981	Mayer et al.	364/900
4,306,388	12/1981	Yuter	186/35 X
4,333,152	6/1982	Best	364/521
4,388,689	6/1983	Hayman et al.	364/401
4,396,985	8/1983	Ohara	364/405
4,415,065	11/1983	Sandstedt	186/39

OTHER PUBLICATIONS

Wilkinson, C. E., "Restaurant System", *IBM T.D.B.*, vol. 24, No. 9, Feb. 1982, pp. 4630-4631.

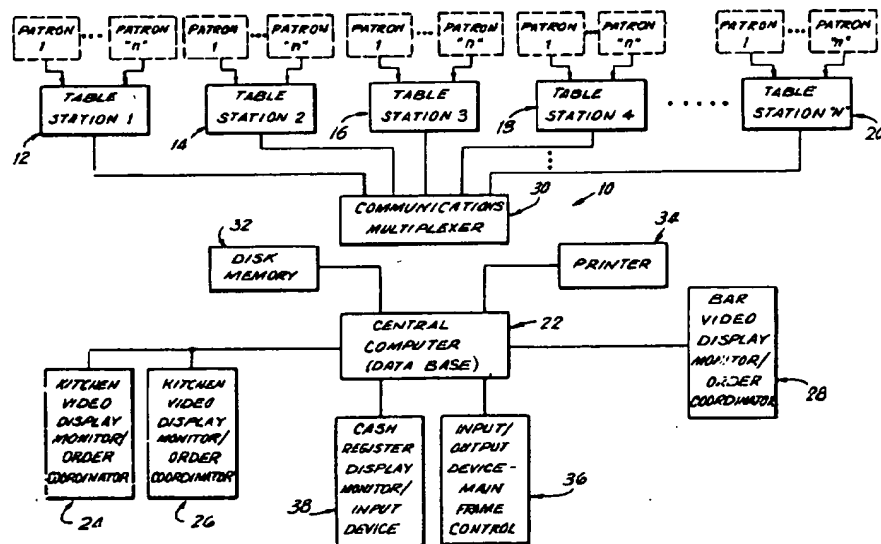
Primary Examiner—Raulfe B. Zache

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[57] ABSTRACT

An interactive restaurant communication system (10) provides integrated food and entertainment processing which enables restaurant patrons to obtain menus for individual food selection on a video monitor (56) at their tables, individually enter their orders into a table station "intelligent" terminal (12, 14, 16, 18, 20) at their tables, select from and interactively play a variety of remotely retrievable interactive entertainment activities using the video monitor (56) while waiting for the food to arrive, and if desired, where applicable, have the food and entertainment charges automatically added to a composite bill which may be printed at the table station terminal (12, 14, 16, 18, 20) or at a remote central terminal (12, 14, 16, 18, 20) are down-line loaded from a central data base (22, 32) in response to terminal requests therefor.

41 Claims, 7 Drawing Figures



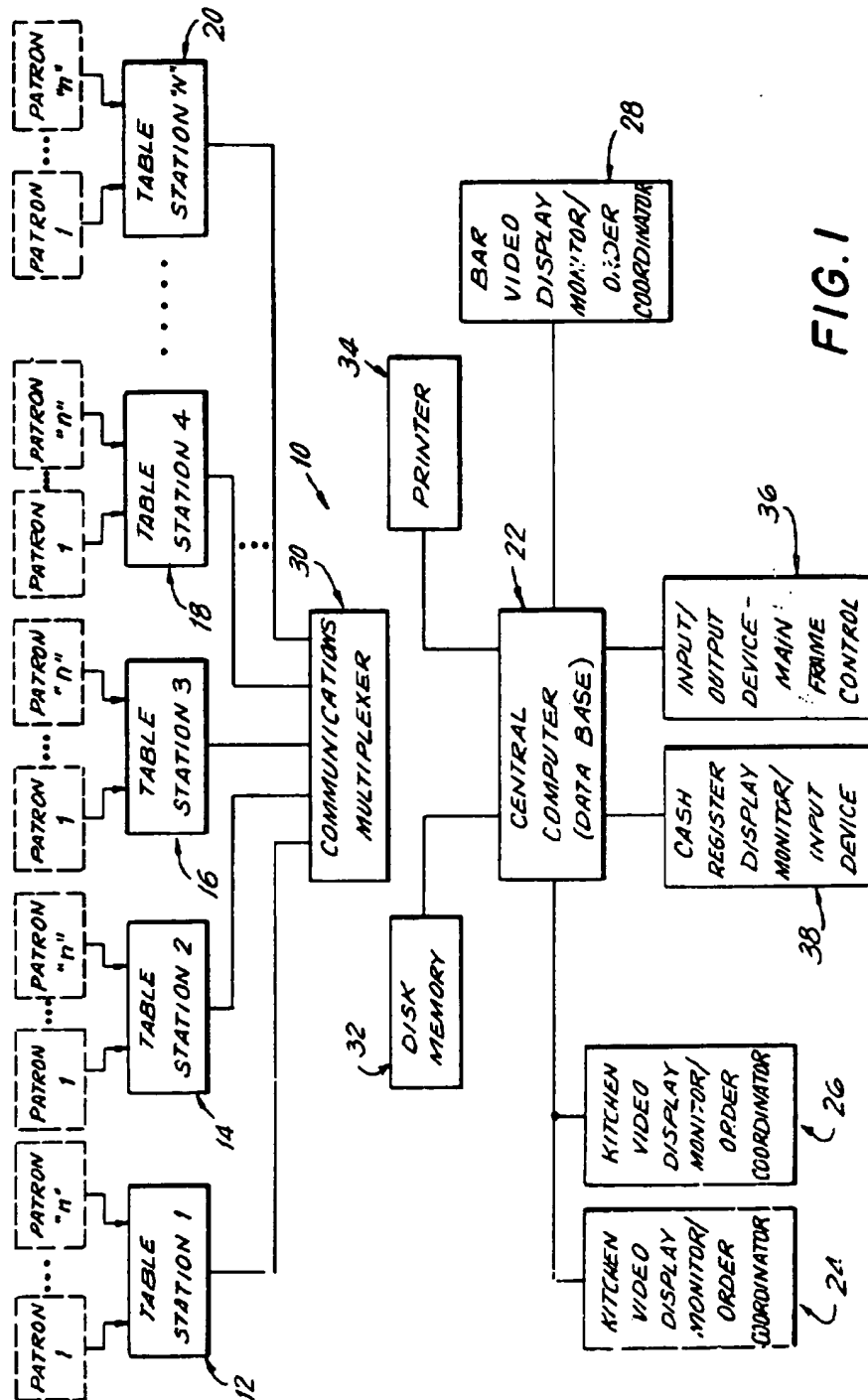


FIG. 1

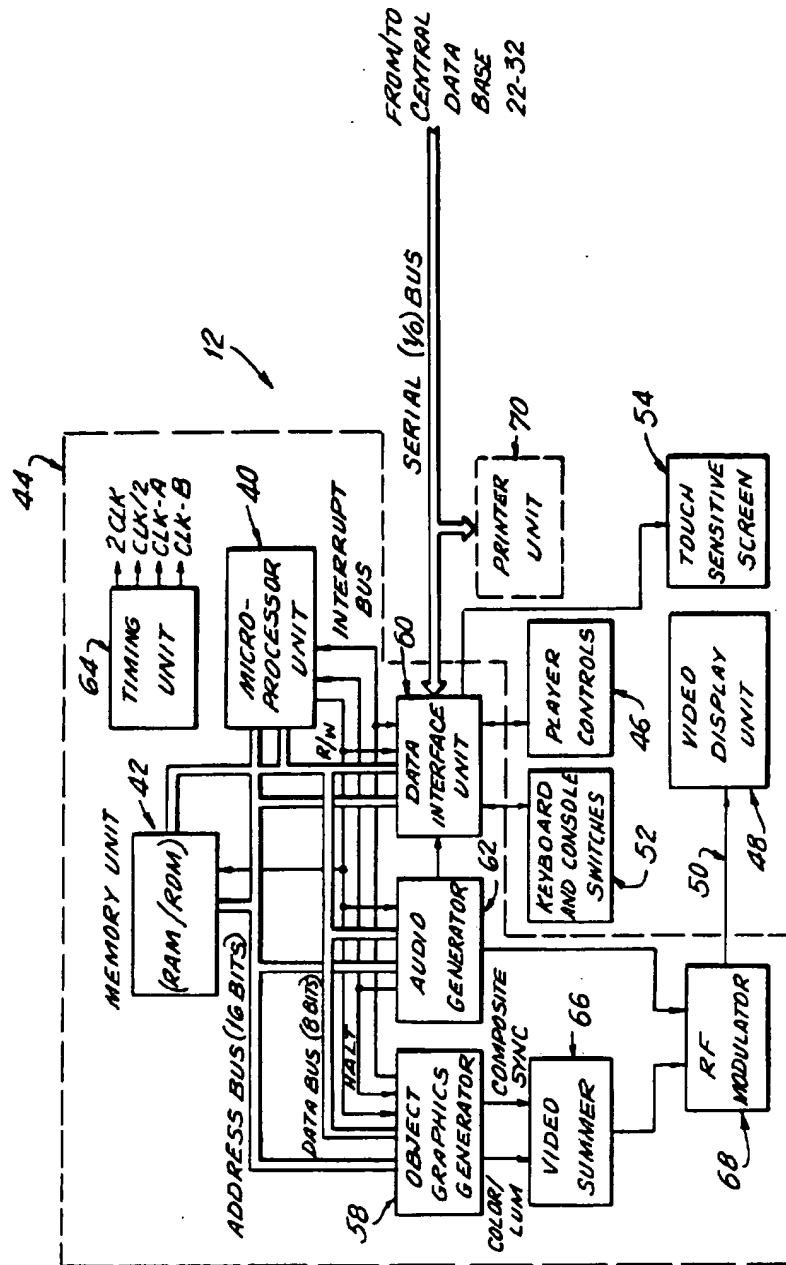
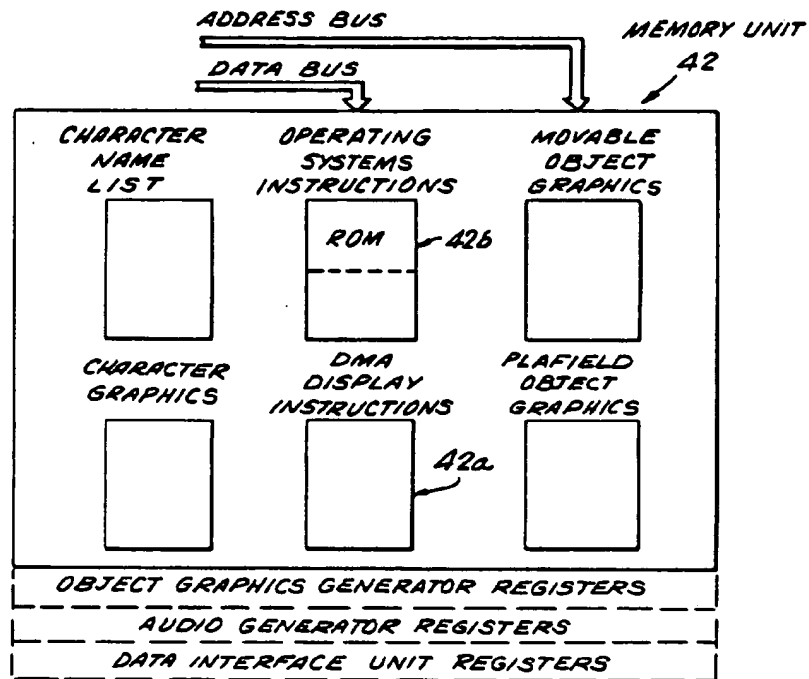


TABLE STATION 1

FIG. 2

FIG. 3



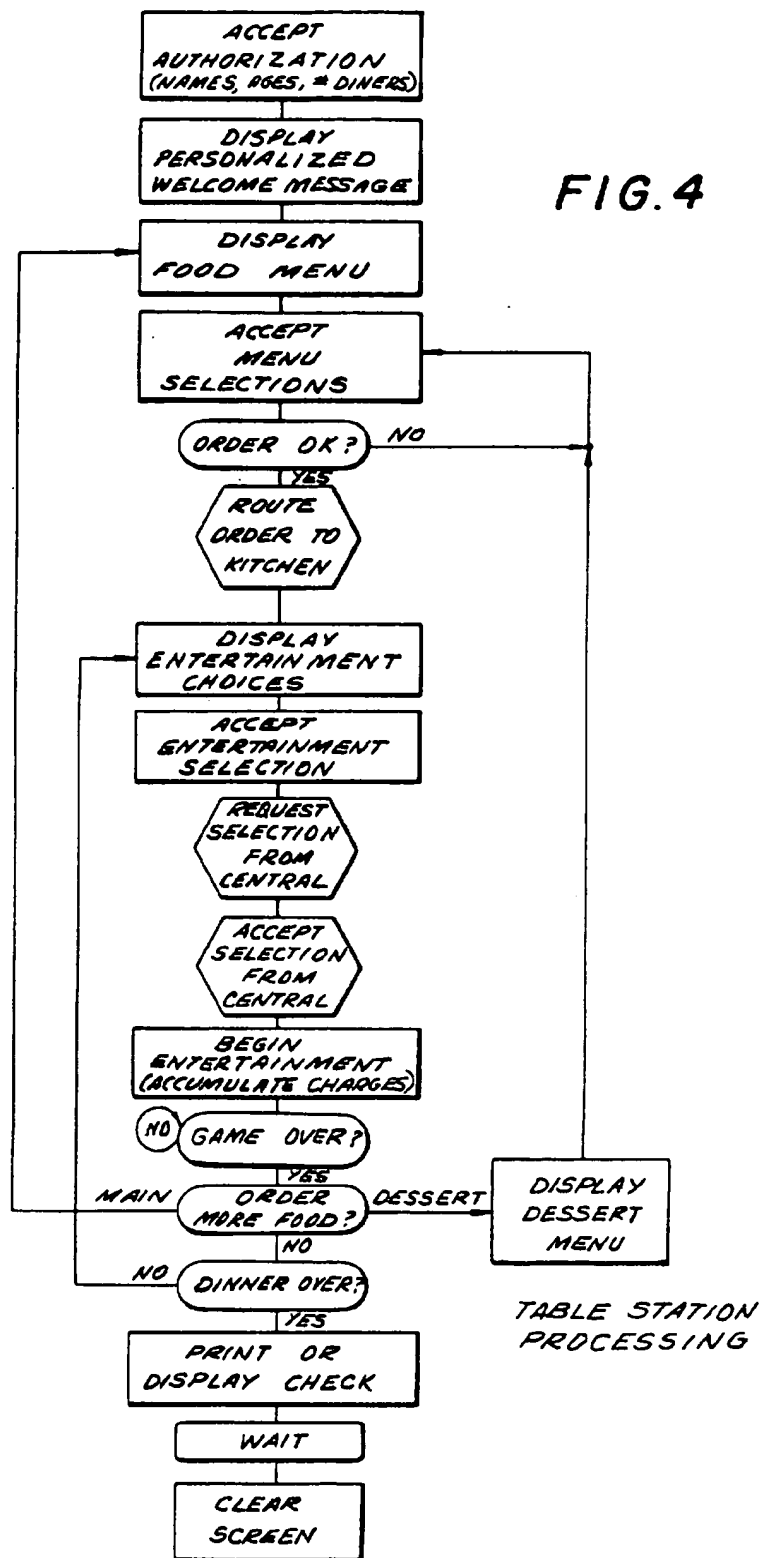
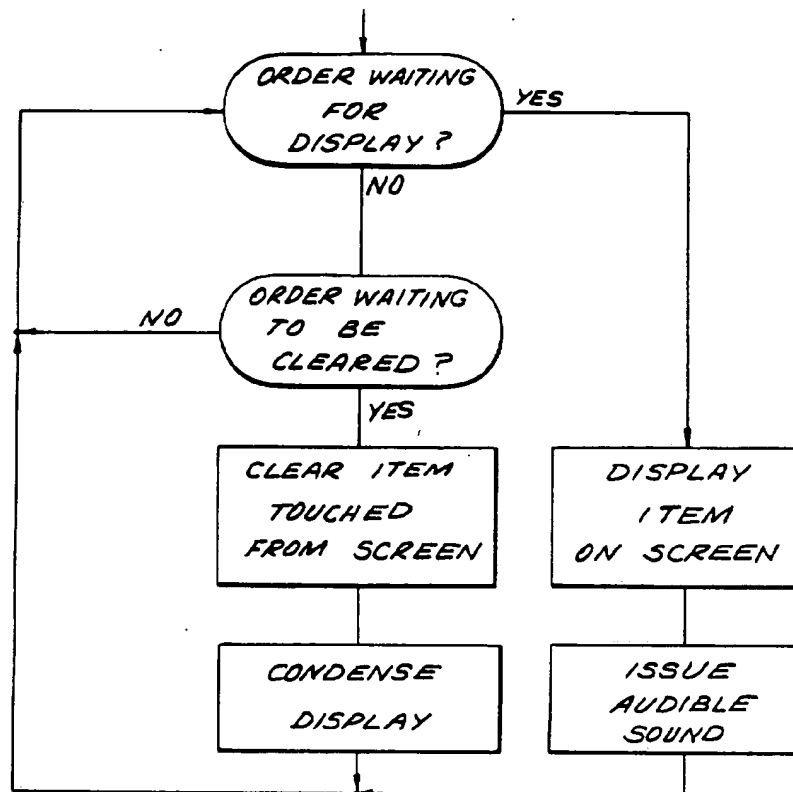


FIG. 5



SAMPLE DISPLAY FORMAT :

TIME ON	TIME LOGGED	TABLE	ITEM
7	6:47	21-1	BURGER PLATTER M/R
7	6:47	21-2	CHEFS SALAD RUSS
7	6:47	21-3	ONION RINGS
12	6:42	14-1	BEEF STEW
12	6:42	14-2	VEAL PARMIGIAN SPAG

KITCHEN/BAR PROCESSING

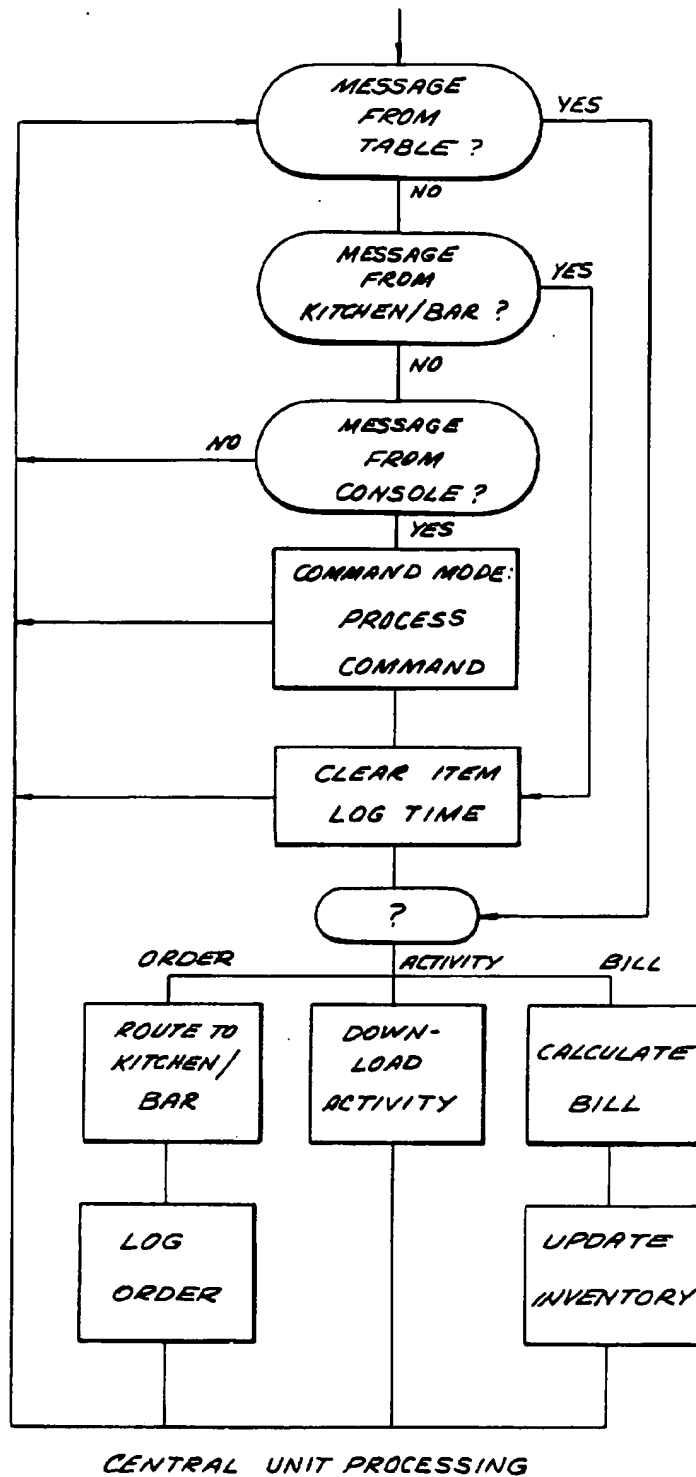


FIG. 6

FIG. 7

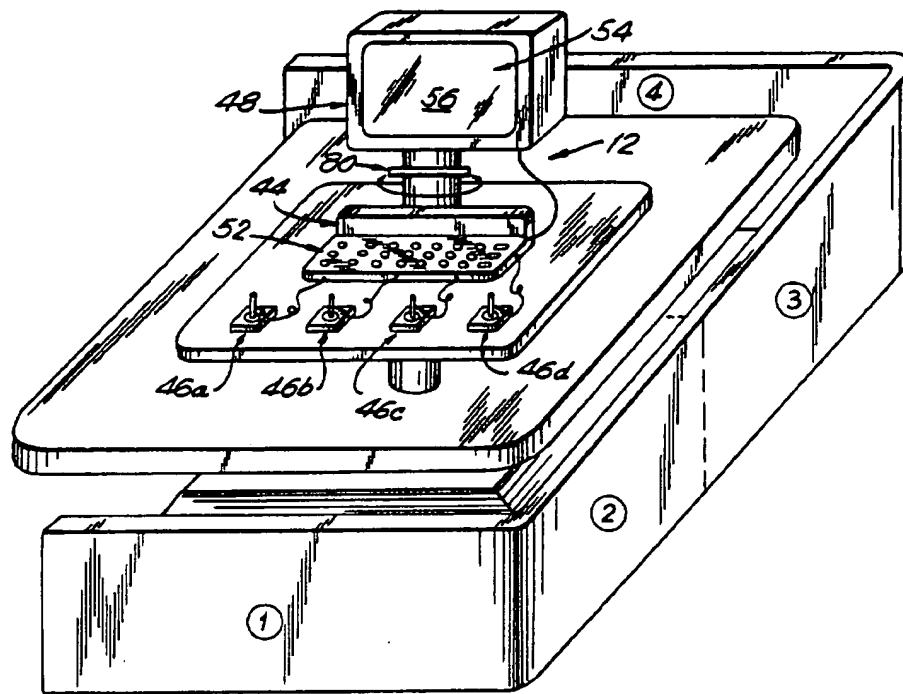


TABLE STATION 1

INTEGRATED INTERACTIVE RESTAURANT COMMUNICATION SYSTEM FOR FOOD AND ENTERTAINMENT PROCESSING

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is related to the commonly owned copending U.S. patent application entitled "Integrated Interactive Restaurant Communication Method for Food and Entertainment Processing", filed Mar. 14, 1983, bearing U.S. Ser. No. 474,983, and naming Lawrence G. Kurland, one of the named inventors herein, as sole inventor, the contents of which is specifically incorporated by reference herein in its entirety.

TECHNICAL FIELD

The present invention relates to interactive communication systems and particularly to interactive restaurant communication systems.

BACKGROUND ART

Interactive communication systems, such as those employing video display terminals, are well known in the art, such as disclosed, by way of example, in U.S. Pat. Nos. 4,064,490; 4,054,911; 4,296,476; 4,143,360; 4,191,956; 4,122,519; 3,903,402; 4,001,807; 4,001,785; 4,075,686; 4,084,229; 4,251,291; 3,746,780; 3,668,307; 3,836,888; 3,752,908; 3,691,295; 3,968,327; 4,008,369; 4,028,733; 3,757,225; 3,814,841; 4,117,605; 4,264,925 and 4,164,024. Today, this field is a very active one, particularly with the advent and wide spread use of microprocessors in many business applications, as well as in personal computers, such as disclosed in U.S. Pat. No. 4,296,476. These prior art interactive systems have expanded dramatically in the field of cable television, such as disclosed in many of the aforementioned exemplary patents, both in two-way communication systems, such as disclosed in U.S. Pat. Nos. 3,691,295 and 3,668,307 by way of example, and in one-way cyclical transmission systems such as disclosed in U.S. Pat. Nos. 4,064,490 and 4,054,911 by way of example, as well as in real-time interactive systems such as disclosed in U.S. Pat. No. 4,264,925 by way of example. Moreover, point-of-sale terminals have become almost a total replacement for the cash register in today's businesses. The restaurant business, however, has been very slow to modernize in the area of service to the public except for modern fast-food operations, still relying on separate waitress service for order taking and separate entertainment features such as music boxes or video games, and the computer revolution has really not caught up. Rather, increased efficiency in restaurant service has primarily been focused on better manual systems, such as the one developed at the Tiffin Inn in Denver, Colo. where a food coordinator person in the kitchen would interface between the waitresses, who never left the dining room, and the cook using busboys to transport the order which were assembled on carts. This system, however, although successful, was still a manual system and did not integrate food and entertainment functions. Thus, although cash register type of point-of-sale systems and automatic order entry systems have made in-roads into the restaurant business, as has distributed interactive video game technology, applicants are not aware of any prior art systems which have successfully integrated interactive entertainment and food functions so that a plurality of independent table station terminals, via

down-line loading and two-way communication with a central data base, can accomplish, among other things, transmission of orders to the kitchen, independently selectable down-loading of entertainment modules to the table stations for interactive play at the terminals; automatic computation of composite bills for both food and entertainment, and accumulation of detailed information for restaurant management.

These disadvantages of the prior art are overcome by the system of the present invention.

DISCLOSURE OF THE INVENTION

The present invention relates to an interactive integrated restaurant information communication system for enabling both individualized food and entertainment interactive information communication, such as two-way communication over a common transmission media, between a central remote data base and a plurality of different multipurpose table station terminals located at various table stations throughout the restaurant for use by the restaurant patrons for both food selection, based on down-line loaded food menu modules selectively retrieved from the central data base, and entertainment selection and interactive play, such as video games, also based on down-line loaded entertainment modules selectively retrieved from the central data base. The charges, where applicable, for both the entertainment and food selections can be compositely automatically billed to the table station, with each patron having a unique identification code for billing and/or service purposes, and the bills printed either centrally or at each table station.

The central data base comprises a central main computer which essentially performs the information routing functions, and remote retrievable storage for storing the various food and entertainment programs or sets of control instructions which are retrieved by the various table station terminals in response to selections made by the restaurant patrons, as well as handling coordination or processing and display of food orders in conjunction with kitchen and bar monitors, accumulation of restaurant management information and billing as well as other functions, if desired. Each of the table station terminals comprises a microprocessor and local storage which is down-line loaded with selected sets of control instructions from the central data base, under control of a master control program, in response to patron selection, and a local video display which is utilized to display data for food and entertainment selection as well as to interactively play the game or entertainment selected, with the microprocessor processing incoming data to enable food and entertainments selections to be transmitted to the central data base and to enable the retrieved entertainment to be interactively played at the terminal in response to the retrieved locally stored selected set of control instructions. The food orders, under control of the central computer, are collected from the various table station terminals, and displayed on central kitchen and bar monitors, with the orders being cleared from the monitor screen, such as by using touch-sensitive screens, as they are filled for each table station. If desired, the orders can be assembled by table station, each having its unique patron identification code, and transported to the pertinent table station. Thus, each table station terminal can independently serve to provide both food selection and entertainment functions, interactively with a central data base, in the

integrated restaurant communication system of the present invention, whereby the overall efficiency of the restaurant will be enhanced and better controlled.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is an overall functional block diagram of the presently preferred embodiment of the integrated interactive restaurant communication system of the present invention for providing integrated food and entertainment processing in accordance with the present invention;

FIG. 2 is an overall schematic block diagram of a typical table station terminal for use in the system of FIG. 1;

FIG. 3 is an illustrative diagram of a typical organization of the memory unit portion of the terminal of FIG. 2;

FIG. 4 is a condition responsive logic flow diagram of a typical table station terminal processing control program for the terminal of FIG. 2;

FIG. 5 is a condition responsive logic flow diagram of a typical kitchen or bar monitor processing control program for a typical kitchen or bar monitor in the system of FIG. 1;

FIG. 6 is a condition responsive logic flow diagram of a typical processing control program for the central computer of the system of FIG. 1; and

FIG. 7 is a diagrammatic perspective illustration of a typical table station in the system of FIG. 1.

BEST MODE FOR CARRYING OUT THE INVENTION

Referring now to the drawings in detail, and initially to FIG. 1 thereof, an overall functional block diagram of the presently preferred embodiment of the integrated interactive restaurant communication system, generally referred to by the reference numeral 10, of the present invention is shown. As will be described in greater detail hereinafter, the interactive restaurant communication system 10 provides integrated food and entertainment processing which enables restaurant patrons to obtain menus for individual food selection on a video monitor at their tables, individually enter their orders into a table station "intelligent" terminal at their tables, select from and interactively play a variety of remotely retrievable interactive entertainment activities using the video monitor while waiting for the food to arrive, and if desired, where applicable, have the food and entertainment charges automatically added to a composite bill which may be printed at the table station terminal or at a remote central location. Moreover, as will be further described herein, the system 10 of the present invention is preferably integrated into the overall restaurant operation so that the food orders placed at the various table station terminals, with five such table station terminals 12, 14, 16, 18 and 20 being shown by way of example in FIG. 1, can be collected and routed by a central computer 22 to the kitchen and bar for display on video terminals or monitors 24, 26 and 28, respectively, for the cook and bartender to enable the orders to be promptly filled, which orders, as illustrated in FIG. 5, can also be displayed by time logged into the system 10 to enable the oldest orders to be filled first. In addition, restaurant efficiency can also be monitored by comparing the time the order is logged with the time the order is filled.

As shown and preferred in FIG. 1, each of the table station terminals 12, 14, 16, 18, 20, which will be de-

scribed in greater detail hereinafter with reference to FIGS. 2-4 and 7, is preferably connected via a conventional two-way communications link, such as conventional RS-232 lines, to the central computer or processor 22 through a conventional multiplexed communication port 30. The quantity of table station terminals 12, 14, 16, 18, 20, which may be serviced or controlled by the central computer 22 is essentially limited primarily by the capacity of the central computer 22 and associated memory 32 which is selected, the desired functions to be performed and the desired access time, all of which are considerations within the ordinary skill of the art based on the system 10 description provided herein. The central processor 22 and associated memory 32, such as a conventional disk memory, comprise the central or remote data base 22-32 which is remotely accessed by the various table station terminals 12, 14, 16, 18, 20 in accordance with the present invention. By way of example, the central processor 22, which is selected to be compatible with the table station terminals 12, 14, 16, 18, 20 employed, may be one having the capabilities of a PDP 11/23 processor, available from Digital Equipment Corporation, having, by way of example, 128K of memory, with the associated memory 32 being, by way of example a data storage medium of the type such as available from Data Systems Design as its DSD 880 combination flexible and Winchester disk drive. In addition, by way of example, the communications multiplexers 30 may be of the type such as the DLV 11. As further shown and preferred in FIG. 1, a printer 34, such as a conventional dot matrix printer, such as an Anadex 9625A, is connected to the central processor 22 for printing bills, if desired, as well as restaurant management information and any other reports desired, such as market survey data. In addition, a conventional master console terminal 36, such as an ADM-3A, is preferably connected to the central processor 22 to enable, for example, review of restaurant operations and changes to be made in the data base 22-32. If desired, a conventional type of cash register point-of-sale terminal 38 may also be connected to the central processor 22.

With respect to the kitchen terminals 24, 26 and bar terminal 28 employed with the central processor 22, these terminals 24, 26, 28 are preferably conventional and employ touch-sensitive screens, such as the Elographics E270, placed over the video monitor screen, to enable keyboard free data entry, such as, by way of example, to clear an item from the screen after the order has been filled or to indicate order status. The associated processing to be performed by these conventional data terminal 24, 26, 28, which are also selected to be compatible with the central processor 22 employed, if desired, may preferably be limited to requested order display and clearing of filled orders in response to data entry, such as via the aforementioned associated touch sensitive screen, with central computer 22 logging the time that the order is cleared from the screen if desired. Such an exemplary arrangement is illustrated in FIG. 5 which is a self-explanatory condition responsive logic flow diagram of a typical kitchen or bar monitor or terminal processing control program for a typical kitchen or bar terminal 24, 26 or 28, respectively, in the system 10 of the present invention, which may be conventionally programmed by one of ordinary skill in the art based on the description herein. It should be noted that although only two kitchen terminals 24, 26 and one bar terminal 28 are shown by way of example in the system of FIG. 1, any desired number of such terminals

may be employed dependent upon the needs of the restaurant and the selected capacity of the system 10.

Referring now to FIGS. 2-4 and 7, a typical preferred table station terminal, such as terminal 12 located at table station 1 in the above example, shall now be described in greater detail. As was previously referred to, the table station terminals 12, 14, 16, 18, 20 are selected to be compatible with the central processor 22 selected. In this regard, preferably the table station terminals are functionally similar to the type marketed, by way of example, by Atari, Inc. as its model 800, or such as the type described in U.S. Pat. No. 4,296,476, the contents of which is specifically incorporated by reference herein in its entirety, conventionally modified to provide a data communications interface or capability with the remote data base 22-32. In this regard, as shown and preferred in FIG. 2, which is essentially the type of terminal described in U.S. Pat. No. 4,296,476, which is a terminal employing a microprocessor 40 based data processor having a programmable graphics generator, the peripheral memory devices, such as a local disk drive unit and cassette unit, have been replaced by the down-line loading capability of the terminal 12 from the remote data base 22-32 into the local random access memory or RAM portion 42a of the terminal's memory unit 42 under control of a master control program or executive or supervisory program, such as illustrated by way of example in FIG. 4, stored in the local read only memory or ROM portion 42b of the terminal memory unit 42. The capacity of the ROM and RAM portions of terminal memory unit 42 is preferably conventionally selected so as to permit the desired functions to be performed by the table station terminal 12.

As shown and preferred in FIGS. 2 and 7, the table station terminal 12 includes a console 44, game control apparatus 46, such as the four conventional video game joystick controllers 46a-46d illustrated in FIG. 7, and a video display unit 48, which preferably is a conventional television monitor with console 44 providing a suitable radio frequency signal corresponding to a television raster scan signal to the video display unit 48 via line 50. The table station terminal 12 preferably has two basic modes of operation, the food selection mode and the entertainment mode in which the terminal 12 can function, by way of example, as an interactive video game unit. In the entertainment mode, as will be described in greater detail hereinafter, the table station terminal can be programmed, via down-line loading from the central data base 22-32, to provide various interactive entertainment activities such as interactive video games or interactive educational materials, such as involving text, diagrams and pictures displayed on video display unit 48, as well as audio. An interactive dialogue can be conducted between the restaurant patrons seated at the table station terminal 12, such as at table station 1 in the above example, using a conventional keyboard 52 and/or, if desired, a conventional touch sensitive screen 54, such as the previously mentioned Elographics E270, which could, if desired, preferably be placed over the normal video screen 56, to provide keyboard-free data entry. In either mode, the food selection mode or entertainment mode, the table station terminal is utilized by the restaurant patrons to store or retrieve information from the remotely located central data base 22-32. The video display unit 48 provides the restaurant patrons located at the table station 1 with graphics information, such as an alphanumeric

display and/or pictorial graphics, such as for games, that is conventionally formulated and transmitted to the video display unit 48 by the electronics contained in console 44 via the communicating line 50.

Apart from the master control program or executive or supervisory program for conventionally supervising the overall operation of data manipulation in the table station terminal 12, which is preferably permanently stored in ROM in memory unit 42, the desired operating programs or modules for providing the food selection and entertainment functions of the multipurpose table station terminal 12 are down-line loaded from the central data base 22-32 for storage in the RAM section 42a of memory unit 42 in response to a request therefor which has been input by the restaurant patron via the keyboard 52, or touch sensitive screen 54 if desired. Regardless of the mode in which the table station terminal 12 operates, the operation of the associated internal circuitry illustrated in FIG. 2 remains essentially the same. Thus, the operating program or module, whether a food menu module used for food selection or order entry, or an entertainment module used for entertainment selection and interactive game or other entertainment activity, can display portions of the requisite information or data on video display unit 48. Preferably, the table station terminal 12 includes a conventional programmable object graphics generator 58 which can be called upon to transfer graphics information from memory unit 42 to the video display unit 48. In this regard, the conventional microprocessor unit 40, under direction of the down-line loaded operating program or module, transfers a list of display instructions into the RAM section 42a (FIG. 3) of the memory unit 42, making the display instructions available to the microprocessor 40. The microprocessor 40 can modify portions of the display instructions, such as the addresses of the various instructions, thereby directing the object graphics generator 58 to those sections of the memory unit 42 containing the graphics information to be displayed, such as alphanumeric characters, lines, heading marks and the like. Alternatively, such as in the entertainment mode, the down-line loaded operating program, such as a down-line loaded entertainment module for an interactive video game, may require information to be displayed in graph-like form, such as a playfield display in the form of a cartesian or other coordinate system displayed to the restaurant patron(s) at the table station 1 via video display unit 48. Further, the down-line loaded operating program may call for a moveable cursor to be displayed in which instance the operating program would contain a block of graphics information containing the picture data for the vertical column that the movable object generator 58 constructs on the video display unit 48, including the picture data for the cursor. The microprocessor would then conventionally write into a movable object DMA counter the address of the location within the memory unit 42 of the block of graphics information containing the cursor picture data. The microprocessor 40 would also preferably write a data word to a DMA control register whose contents are used to conventionally inform a DMA control unit that movable object graphics will be displayed. Accordingly, as described in detail in U.S. Pat. No. 4,296,476 specifically incorporated by reference herein, the DMA control unit provides the moveable object DMA counter with signals that cause the DMA counter to sequentially address the memory locations of memory unit 42 containing the graphics information for

the cursor. The data used by the microprocessor 40 in the entertainment mode and/or with respect to cursor movement, in either mode, is preferably provided by the joysticks 46a-46d or operation of the keyboard 52, or the touch-sensitive screen 56, by the restaurant patrons seated at the table station 1. Typically, the joysticks 46a-46d, assuming by way of example one for each of up to four restaurant patrons to be seated at the table station 1, provide user generated position information, and possibly other game information, which is communicated to the microprocessor 40 via a conventional data interface unit 60. The conventional joysticks 46a-46d may typically be of the type disclosed in U.S. Pat. No. 4,091,234, the teachings of which are specifically incorporated by reference herein in its entirety. In addition to the above, as further shown and preferred in FIG. 2, the terminal 12 also includes a conventional audio generator 62 for generating audio signals, a conventional timing unit 64 for generating the various timing signals required such as those illustrated, by way of example, for use in the system of U.S. Pat. No. 4,296,476, a conventional video summer circuit 66 for conventionally summing the color/luminance and composite sync signal output of the object graphics generator 58, and a conventional RF modulator 68 which provides the displayable video signal to the video display unit 48 via line 50. Furthermore, an optional conventional printer unit 70 may also be provided at the table station for local printing of bills, or other data if desired, with the printer 70 being connected to the microprocessor 40 via the data interface unit 60 and a serial (I/O) bus through which the terminal 12 is connected to the central data base 22-32. It should be noted that after the desired food menu module or operating program or entertainment module or operating program is requested by and down-line loaded to the terminal 12, the microprocessor 40 can then process incoming data provided via the keyboard 52, player controls 46 or touch sensitive screen 56 in accordance therewith so that food orders may be selected and transmitted back to the central data base 22-32 for billing and filling and/or interactive games may be played. In this regard, FIG. 3 provides an illustrative diagram of a typical organization of the memory unit 42, such as described in U.S. Pat. No. 4,296,478, and FIG. 4 provides a self-explanatory condition responsive logic flow diagram of a typical processing control program for the table station terminal 12, which may be conventionally programmed by one of ordinary skill in the art based on the description herein.

As shown and preferred in FIG. 7, by way of example, preferably each table station has a unique position identification for each restaurant patron to facilitate accurate order filling and billing. Thus, assuming four restaurant patrons per table station by way of example, the various restaurant patrons at table station 1 illustrated in FIG. 7 would identify themselves to the table station terminal 12 as 1-1, 1-2, 1-3 and 1-4. In addition, by way of example, the video display unit 48 could be mounted on a universal swivel 80 so as to be rotatable for viewing by all of the patrons at the table station 1, with the keyboard 52 and joysticks 46a-46d being connected to the terminal 12 via conventional electronic umbilical cords to facilitate use by each patron at the table station 1. It should be noted that the table station configuration shown in FIG. 7 is merely illustrative and many other such configurations will readily occur to one of ordinary skill in the art.

With respect to the operation of the central data base 22-32 in connection with the processing of food menu and entertainment requests, including the down-line loading of food menu modules or operating programs and entertainment modules or operating programs to the requesting table station terminals 12, 14, 16, 18, 20, the logging and routing of orders to the kitchen and bar terminals 24, 26, 28, the calculation of composite bills, the updating of inventory and the overall processing of messages, a condition responsive logic flow diagram of a typical processing control program for the central computer 22 for accomplishing the above is shown in FIG. 6. The program itself can conventionally readily be written by one of ordinary skill in the art based on the description herein.

Summarizing the overall operation of the preferred system 10 of the present invention, either after or before the diners or restaurant patrons are seated at their respective table station, the table station terminal would preferably display a welcome message and a list of choices for the patrons. The patrons would then select a choice by touching a location on the touch sensitive screen or by pressing keys on the keyboard. The initial choices may be type of food, type of meal, etc. Thereafter, by stepping through various displays, the patrons, using their unique position identification code, could order their meals which would be transmitted to the central data base for billing and filing. The patrons would then be allowed to select entertainment such as games, educational programs, computer generated art displays, etc., and possibly television channels if desired by using a television receiver as the video display unit. Associated charges for both food and entertainment, where applicable, would automatically be added to a composite bill. The central computer downloads the selected activity to the requesting table station terminal, with each terminal being capable of independently requesting and receiving its own operating programs from the central data base. The patrons would then be free to interact with the downloaded operating program, whether it were a food menu module or an entertainment module. If desired, an initialization program could be run daily, or at any time, to set price changes, menu changes, entertainment changes, current time and date, enter deliveries, enter daily specials, etc.

By utilizing the system of the present invention, restaurant efficiency and flexibility are enhanced and better control can be achieved.

It is to be understood that the above described embodiments of the invention are merely illustrative of the principles thereof and that numerous modifications and embodiments of the invention may be derived within the spirit and scope thereof.

What is claimed is:

1. An interactive integrated restaurant information communication system for enabling both individualized food and entertainment interactive information communication with a central remote data base from each of a plurality of different multipurpose table station terminals utilizable by a plurality of different restaurant patrons, said system comprising a central computer means for remotely retrievably storing information comprising a plurality of food menu modules and entertainment modules for selective retrieval of said remotely stored information by each of said table station terminals over a common transmission media and for processing information received from each of said table station terminals; and a plurality of said table station terminals, each

of said table station terminals comprising microcomputer means for controlling the operation thereof, said microcomputer means being connected to said common transmission media for receiving and transmitting information between said central computer means and said table station terminals, each of said table station terminals further comprising food and entertainment selection and control means connected to said microcomputer means for enabling retrievable selection of said remotely stored food and entertainment modules from said central computer means and interaction therewith at said table station terminal, a local storage means connected to said microcomputer means for locally storing said selected ones of said food and entertainment modules and a common local video type display means connected to said microcomputer means and said common transmission media for connecting each of said table station terminals to said central computer means for enabling communication of said respective information therebetween and for commonly displaying data corresponding to said selected module; each of said remotely stored food and entertainment modules information comprising a different set of control instructions for said table station terminal, each of said sets of control instructions corresponding to a different selectable food menu or entertainment function respectively, for said terminal, said information transmittable from said central computer means over said common transmission media comprising said retrievably stored sets of control instructions for down-line loading of said local storage means at said table station terminal of a selected set of said control instructions in response to a request therefor by a restaurant patron via said selection means, said sets of control instructions for said table station terminal comprising sets of control instructions for said microcomputer means; each of table station terminals further comprising means connectable to said microcomputer means, to said selection means and to said local storage means for selectively controlling the local storage of said remotely transmitted information in said local storage means dependent on at least said selected interactive food or entertainment function for said terminal, said microcomputer means being operable in accordance with at least a first one of said locally stored remotely transmitted selected sets of control instructions and comprising means capable of processing incoming data provided via said selection and control means in accordance therewith, processed food menu selection data processed by said incoming data processing means being transmittable from said table station terminal to said central computer means over said common transmission media, said central computer means further comprising central display means for commonly displaying said processed food menu selection data from said plurality of table station terminals, said remotely stored entertainment modules comprising interactive activities, said microcomputer incoming data processing means comprising means capable of processing incoming interactive entertainment activity data provided from said selection and control means corresponding to a selected down-line loaded interactive entertainment activity for providing a displayable processed output therefrom on said common local video type display means; whereby each table station terminal may independently provide both interactive entertainment and food selection on a common video type display terminal in cooperation with a central data base.

2. An interactive integrated restaurant information communication system in accordance with claim 1 wherein said local display means comprises means capable of locally displaying at least said selected food menu selection data and said processed interactive entertainment activity data.

3. An interactive integrated restaurant information communication system in accordance with claim 1 wherein each of said remotely stored food and entertainment modules information further comprises food menu selection data and entertainment data, respectively.

4. An interactive integrated restaurant information communication system in accordance with claim 3 wherein said local display means comprises means capable of locally selectively displaying at least said food menu selection data and said entertainment data dependent on said selected locally stored set of control instructions.

5. An interactive integrated restaurant information communication system in accordance with claim 4 wherein said local display means further comprises means for locally displaying said processed interactive entertainment activity data.

6. An interactive integrated restaurant information communication system in accordance with claim 5 wherein said interactive entertainment activity comprises on interactive video game.

7. An interactive integrated restaurant information communication system in accordance with claim 2 wherein said local display means further comprises means for locally displaying said processed interactive entertainment activity data.

8. An interactive integrated restaurant information communication system in accordance with claim 3 wherein said local display means further comprises means for locally displaying said processed interactive entertainment activity data.

9. An interactive integrated restaurant information communication system in accordance with claim 4 wherein said local display means further comprises means for locally displaying said processed interactive entertainment activity data.

10. An interactive integrated restaurant information communication system in accordance with claim 1 wherein said local display means further comprises means for locally displaying said processed interactive entertainment activity data.

11. An interactive integrated restaurant information communication system in accordance with claim 10 wherein said remotely stored entertainment modules interactive activities comprise a plurality of different interactive video games.

12. An interactive integrated restaurant information communication system in accordance with claim 11 wherein said local display means comprises video display means, said displayable data comprising video displayable data.

13. An interactive integrated restaurant information communication system in accordance with claim 1 wherein said local display means comprises video display means, said displayable data comprising video displayable data.

14. An interactive integrated restaurant information communication system in accordance with claim 6 wherein said local display means comprises video display means, said displayable data comprising video displayable data.

15. An interactive integrated restaurant information communication system in accordance with claim 7 wherein said local display means comprises video display means, said displayable data comprising video displayable data.

16. An interactive integrated restaurant information communication system in accordance with claim 8 wherein said local display means comprises video display means, said displayable data comprising video displayable data.

17. An interactive integrated restaurant information communication system in accordance with claim 9 wherein said local display means comprises video display means, said displayable data comprising video displayable data.

18. An interactive integrated restaurant information communication system in accordance with claim 10 wherein said local display means comprises video display means, said displayable data comprising video displayable data.

19. An interactive integrated restaurant information communication system in accordance with claim 10 wherein said local storage means comprises random access memory means.

20. An interactive integrated restaurant information communication system in accordance with claim 19 wherein said local storage selective control means comprises read only memory means for controlling the loading of at least one of said selected remotely transmitted sets of instructions into said random access memory means and enabling subsequent control of said microcomputer means in accordance with said locally stored selected one of said remotely transmitted sets of instructions.

21. An interactive integrated restaurant information communication system in accordance with claim 1 wherein said local storage selective control means comprises read only memory means for controlling the loading of at least one of said selected remotely transmitted sets of instructions into said local storage means and enabling subsequent control of said microcomputer means in accordance with said locally stored selected one of said remotely transmitted sets of instructions.

22. An interactive integrated restaurant information communication system in accordance with claim 3 wherein said local storage means comprises random access memory means.

23. An interactive integrated restaurant information communication system in accordance with claim 22 wherein said local storage selective control means comprises read only memory means for controlling the loading of at least one of said selected remotely transmitted sets of instructions into said random access memory means and enabling subsequent control of said microcomputer means in accordance with said locally stored selected one of said remotely transmitted sets of instructions.

24. An interactive integrated restaurant information communication system in accordance with claim 22 wherein said local storage selective control means comprises read only memory means for controlling the loading of at least one of said selected remotely transmitted sets of instructions into said local storage means and enabling subsequent control of said microcomputer means in accordance with said locally stored selected one of said remotely transmitted sets of instructions.

25. An interactive integrated restaurant information communication system in accordance with claim 12

wherein said local storage means comprises random access memory means.

26. An interactive integrated restaurant information communication system in accordance with claim 25 wherein said local storage selective control means comprises read only memory means for controlling the loading of at least one of said selected remotely transmitted sets of instructions into said random access memory means and enabling subsequent control of said microcomputer means in accordance with said locally stored selected one of said remotely transmitted sets of instructions.

27. An interactive integrated restaurant information communication system in accordance with claim 25 wherein said local storage selective control means comprises read only memory means for controlling the loading of at least one of said selected remotely transmitted sets of instructions into said local storage means and enabling subsequent control of said microcomputer means in accordance with said locally stored selected one of said remotely transmitted sets of instructions in accordance therewith.

28. An interactive integrated restaurant information communication system in accordance with claim 18 wherein said local storage means comprises random access memory means.

29. An interactive integrated restaurant information communication system in accordance with claim 28 wherein said local storage selective control means comprises read only memory means for controlling the loading of at least one of said selected remotely transmitted sets of instructions into said random access memory means and enabling subsequent control of said microcomputer means in accordance with said locally stored selected one of said remotely transmitted sets of instructions.

30. An interactive integrated restaurant information communication system in accordance with claim 28 wherein said local storage selective control means comprises read only memory means for controlling the loading of at least one of said selected remotely transmitted sets of instructions into said local storage means and enabling subsequent control of said microcomputer means in accordance with said locally stored selected one of said remotely transmitted sets of instructions.

31. An interactive integrated restaurant information communication system in accordance with claim 1 wherein said communication media is a two-way communication media.

32. An interactive integrated restaurant information communication system in accordance with claim 1 wherein said processed incoming data comprises billing information at least with respect to said food selection based on said food menu selection data, said billing information being transmitted to said central computer means over said communication media.

33. An interactive integrated restaurant information communication system in accordance with claim 32 wherein said billing information further comprises billing information with respect to said selected entertainment module.

34. An interactive integrated restaurant information communication system in accordance with claim 33 wherein said central computer means further comprises printer means for printing a composite bill for a given table station terminal based on said transmitted food selection billing information and entertainment selection billing information.

13

35. An interactive integrated restaurant information communication system in accordance with claim 33 wherein said table station terminal further comprises printer means for printing a composite bill for said table station terminal based on said food selection and entertainment selection billing information for said table station terminal.

36. An interactive integrated restaurant information communication system in accordance with claim 12 wherein said processed incoming data comprises billing information at least with respect to said food selection based on said food menu selection data, said billing information being transmitted to said central computer means over said communication media.

37. An interactive integrated restaurant information communication system in accordance with claim 36 wherein said billing information further comprises billing information with respect to said selected entertainment module.

38. An interactive integrated restaurant information communication system in accordance with claim 37 wherein said central computer means further comprises printer means for printing a composite bill for a given

14

table station terminal based on said transmitted food selection billing information and entertainment selection billing information.

39. An interactive integrated restaurant information communication system in accordance with claim 37 wherein said table station terminal further comprises printer means for printing a composite bill for said table station terminal based on said food selection and entertainment selection billing information for said table station terminal.

40. An interactive integrated restaurant information communication system in accordance with claim 36 wherein said local display means comprises means capable of locally displaying at least said selected food menu selection data and said processed interactive entertainment activity data.

41. An interactive integrated restaurant information communication system in accordance with claim 36 wherein said local display means further comprises means for locally displaying said processed interactive entertainment activity data.

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